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EXAMINER	
MAYER, SUZANNE MARIE	
ART UNIT	**PAPER NUMBER**
1653	

DATE MAILED: 10/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/770,127	SERVANT ET AL.	
	Examiner	Art Unit	
	Suzanne M. Mayer, Ph.D.	1653	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-65 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-65 is/are rejected.

7)☒ Claim(s) 2-25,27-54 and 60-65 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 03 February 2004 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Oath/Declaration

1. The oath is objected to because it does not identify the mailing address of each inventor. A mailing address is an address at which an inventor customarily receives his or her mail and may be either a home or business address. The mailing address should include the ZIP Code designation. The mailing address may be provided in an application data sheet or a supplemental oath or declaration. See 37 CFR 1.63(c) and 37 CFR 1.76.

The information provided in the ADS regarding the addresses of applicants states that all of the inventors citizenship is the United States whereas the Oath clearly states otherwise. Clarification is required.

It does not include the notary's signature.

It does not include the notary's seal and venue.

Claim Objections

2. Claims 3 and 57 are objected to because of the following informalities. The syntax used in the instant claims of "Hela" would be better represented by "HeLa". Appropriate correction is required.

3. Claims 4-25, 27-54 and 60-65 are objected to as being dependent upon a rejected base claim. There claims are also rejected on their own merits.

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claim 1 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-3, 8 and 10 of U.S. Patent No. 6,558,910, where claims 2, 3, 8 and 10 all depend from claim 1. Although the conflicting claims are not identical, they are not patentably distinct from each other because they claim the same basic invention. U.S. Patent No. 6,558,910 claimed invention is a method to identify a compound that modulates taste signaling in taste

cells by utilizing a TR2 polypeptide that is expressed in a eukaryotic cell where the polypeptide is coupled to a G-protein coupled receptor and the determination of the effect of the said compound on the receptor is performed by measuring changes in intracellular cAMP, cGMP, IP3 or calcium levels. Therefore claim 1 of the instant application is an obvious variation of the claimed invention of U.S. Patent 6,558,910.

6. Claims 1-4 and 15-21 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 116-120, 122, 123, 127, 128, 130-132, and 142 of copending Application No. 10/725,472. Although the conflicting claims are not identical, they are not patentably distinct from each other because the cited claims of the instant application claim the same invention and subject matter as the cited claims in Application No. 10/725,472. Claims 1-4 and 15-21 claim the same invention of claims 116-120, 122, 123, 127, 128, 130-132, 142 of Zoller et al. which is a method of for identifying a compound that modulates the activity of a T1R taste receptor by providing a eukaryotic cell such as HEK-293 that stably or transiently expresses a functional T1R taste receptor as well as a promiscuous G-protein such as $G_{\alpha 15}$ protein and identifies the compound that modulates the T1R receptor by assaying the effect of the compound by measuring the changes in the intracellular second messenger cAMP, which can be done via a high throughput screening assay. These two claimed inventions are obvious variations of one another.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claim 8 recites the limitation "said monoclonal antibody" in reference to claim 6 which only recites a ligand that specifically binds to MAPK but does not detail what kind of ligand. There is insufficient antecedent basis for this limitation in the claim.

9. Claims 24 and 25 contain the trademark/trade name AiphaScreen and ERK MAPK Activation HitKit, respectively. Where a trademark or trade name is used in a claim as a limitation to identify or describe a particular material or product, the claim does not comply with the requirements of 35 U.S.C. 112, second paragraph. See *Ex parte Simpson*, 218 USPQ 1020 (Bd. App. 1982). The claim scope is uncertain since the trademark or trade name cannot be used properly to identify any particular material or product. A trademark or trade name is used to identify a source of goods, and not the goods themselves. Thus, a trademark or trade name does not identify or describe the goods associated with the trademark or trade name. In the present case, the trademark/trade name is used to identify/describe various assay kits and, accordingly, the identification/description is indefinite.

10. Claim 46 recites the limitation "the method of claim 43 wherein said immunoassay.....". There is insufficient antecedent basis for this limitation in the claim because claim 43 does not recite the method of an immunoassay.

11. Claim 58 recites the limitation "the assay kit of claim 40....". There is insufficient antecedent basis for this limitation in the claim because claim 40 is a method claim.

12. Claims 63 and 65 recite the limitation "composition of claim 61" in reference to claim 61 which merely claims a compound and not a composition. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

13. Claims 1-4, 9-13, 15-20, 23, and 47-49 are rejected under 35 U.S.C. 102(e) as being anticipated by Zoller et al.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Claims 1-3 are rejected because claims 116-123, 127-128, 130-132 and 179-193, and specifically paragraphs (see p. 22, paragraphs [0241 and 0245]) meet the limitations of the instant application by teaching the same invention which is a method to identify a compound(s) that modulates the activity of a T1R or T2R receptor by providing to a eukaryotic cell that expresses at least one functional T1R or T2R receptor and a G protein that it to, then contacting the said cell with a compound that modulates

the activity of said receptors, and assaying the effect of this compound by determining the increase or decrease in second messengers in the cell that are directly affected by G-protein coupled receptors such as cAMP, and finally interpreting the results of the assay. The instant application chooses as a host cell of choice HEK-293 cells which are human cells and thus the limitations of claims 2 and 3 of the instant application are also satisfied by Zoller et al.

Claim 4 of the instant application limits the assay method to that of a high throughput screening assay. This claim limitation is met by Zoller et al. as they claim high throughput screen assays in claim 142 which is dependent on the method claims of 116-123 as well as being taught as a preferred assay method of the invention disclosed by Zoller et al. (see p. 3, paragraph [0038]).

Claims 9-13 and 23 are rejected as being anticipated by Zoller et al., paragraph [0250] which teaches that the assay of the claimed invention by Zoller et al. that detects intracellular cyclic nucleotides, such as cAMP, may identify compounds which result in the decrease of cAMP levels. In such instances, it is suggested to add an agent that increases intracellular cAMP levels, such as forskolin, prior to adding a receptor activating compound. Furthermore, the detection of the cAMP levels may obtained by any immunoassay.

Claims 15-16 and 17-19 are rejected as being anticipated by Zoller et al., paragraphs [0240-0241] and [0137], respectively, because they teach that a combination of T1R proteins according to their claimed invention can be transiently *or* stably co-expressed in a eukaryotic cell such as HEK-293. Paragraph [0137], last line,

teaches that it is a preferred embodiment of the claimed invention that the host cell, such as a HEK-293 cell line, will stably express a G protein such as the promiscuous $G\alpha_{15}$ and thus will subsequently couple to any functional T1R or T2R receptor that is co-expressed in the same cell line.

Claim 20 is rejected as being anticipated by Zoller et al., p. 7, paragraph [0088] which discloses that if the preferred host cells of the invention do not express an appropriate G protein, then they can be transfected with a gene encoding a promiscuous G protein.

Claim 47 and 48 are rejected as being anticipated by Zoller et al., p. 6, paragraph [0077] because it is taught that the T1Rs that can be used in the present invention are found throughout the examples and subsequently, example 1 uses rat T1Rs and example 5 utilizes human T1Rs therefore the limitation of this claim has been satisfied.

Claim 49 is rejected as being anticipated by Zoller et al., p. 34 and 35 Example 11 which discloses the method of how to generate cell lines that stably co-express T1R1/T1R3 and T1R2/T1R3 for the claimed invention.

Claim 51 is rejected as being anticipated by Zoller et al., p. 35, Example 11, lines 13-15 where T1R1/T1R3 stable cells were seeded into 96 well microtiter plates and incubated for 24 hours.

Claims 52-52 are rejected as being anticipated by Zoller et al., claims 116-127, the method claims of Zoller et al. which are consistent with claim 1 of the instant application are 116,120, 122, 123, 127 and 128. The claims from Zoller et al., which overlap with the instant claims of this rejection are 117 wherein the cell is bound to a

solid phase and claim 118 where the cell is in solution where both of these claims are dependent upon the method claims identified above in this paragraph.

Claim 60 is rejected as being anticipated by Zoller et al., p. 4 paragraph [0060] that says the experimental data of the present invention shows that L-glutamate selectively responds to T1R1/T1R3 umami taste receptors.

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

15. Claims 26-29, 37-42, 61-63 and 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zoller et al.

Zoller et al. teach in claims 161-178 a method that utilizes preferably an HEK-293 cell line that stably inducibly expresses T1R1/T1R3 or T1R2/T1R3 receptors as well as $G\alpha_{15}$ or $G\alpha_{16}$ proteins to which they functionally couple. The method uses L-glutamate which is a known stimulant of the T1R1/T1R3 receptors. L-glutamate is used to screen for other compounds that enhance or modulate the activity of L-glutamate in its ability to activate the T1R1/T1R3 umami taste receptor which can be assayed via binding assays or fluorometric assays. In regard to the sweet taste receptor, T1R2/T1R3, claim 178 of Zoller et al. states the method is used to screen for compounds that enhance or modulate the activity of a sweetener to activate the T1R2/T1R3 receptor. The afore

mentioned method claims do not, however, teach an assay method that determines if the compound that modulates L-glutamate activity on the T1R1/T1R3 umami taste receptor or a compound that modulates sweetener activity on T1R2/T1R3 receptor can be assayed by cAMP accumulation, MAPK activity or adenylyl cyclase activity or that monosodium glutamate should be used for the T1R1/T1R3 umami taste receptor. Additionally, in regards to the sweetener that modulates the T1R2/T1R3 sweet taste receptor, the specific sweetener is not taught in these claims.

However, on page 1, paragraph [0011] Zoller et al. state that the T1R1/T1R3 umami taste receptor responds to monosodium glutamate. Also, on p. 4 paragraph [0058] it is stated that for HEK-293-$G\alpha_{15}$ cells that co-express human T1R2/T1R3 sweet taste receptors, that they specifically respond to cyclamate, sucrose, aspartame and with sucrose being the only natural sweetener. Furthermore, on p. 5, paragraph [0070] it is stated that the effect of a compound on sweet or umami taste receptors (T1R2/T1R3 and T1R1/T1R3, respectively) may be determined by various means such as cAMP assays.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a cAMP assay rather than a ligand binding assay or fluorometric assay to determine the effect of a compound which modulates the activity of L-glutamate on the T1R1/T1R3 umami taste receptors or a compound that modulates the activity of a sweetener, such as those identified on p. 4 paragaph [0058], on the T1R2/T1R3 sweet taste receptors in order to determine the effect that the candidate compound has on L-glutamate, or to substitute monosodium glutamate in this instance,

because Zoller et al. teach that many different assays, including cAMP assays, can be utilized to determine the effects of various compounds that modulate T1R1/T1R3 and T1R2/T1R3 umami and sweet taste receptors. Once these compounds have been identified, it would also have been obvious to combine these identified compounds into a composition that could be utilized in a food, beverage or medicament to alter the taste of these because Zoller states on p. 1, paragraph [0010] that identified compounds that modulate T1R1/T1R3 and T1R2/T1R3 would be useful for improving the taste and palatability of foods, beverages, medicinals for human or animal consumption. Furthermore, a reasonable expectation of success exists because the prior art indicates that these particular G-protein coupled taste receptors are known to have a direct effect on the calcium dependent intracellular cascade effect that involves the second messengers of cAMP when utilizing G-proteins such as the promiscuous $G\alpha_{15}$ proteins and therefore a cAMP assay would be expected to be a successful assay.

15. Claims 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zoller et al. as applied to claims 26-29, 37-42, 61-63 and 65 above, and further in view of Li et al.

Zoller et al. teach the methods as described above in paragraph 12 of this Office action. Zoller et al., however, do not teach that the G protein of the method can be G_i, $G_{\alpha l\text{-}1}$, $G_{\alpha l\text{-}2}$, $G_{\alpha l\text{-}3}$, $G_{\alpha o\text{-}1}$, $G_{\alpha o\text{-}2}$, or G_{az} or a variant or chimera thereof that functionally couples to T1R or T2R receptors.

Li et al. teach a method where HEK-293T cells are transfected with T1R2/T1R3 and $G_{\alpha 15}$-chimeras. The chimeras correspond to the following other G-proteins

chimeras: $G_{\alpha q}$ and $G_{\alpha 11}$, $G_{\alpha 14}$, $G_{\alpha s}$ and $G_{\alpha olf}$, $G_{\alpha l1}$, $G_{\alpha i2}$, $G_{\alpha t1}$, $G_{\alpha t2}$, $G_{\alpha gust}$, $G_{\alpha i3}$, $G_{\alpha 01}$ and $G_{\alpha 02}$, $G_{\alpha z}$, $G_{\alpha 12}$, and $G_{\alpha 13}$. Each of the various cells that contained the T1R2/T1R3 and $G_{\alpha 15}$-chimeras were assayed with the compound sucrose and then tested for each cells response for intracellular calcium increases. As can be seen from figure 2, panel E on p. 4694, the G protein chimera with $G_{\alpha 15}$-$G_{\alpha i3}$ showed the most significant increase in intracellular calcium levels in response to sucrose stimulation and a significantly greater response than wild-type $G_{\alpha 15}$ protein.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the method of Zoller et al. that utitlizes a functional taste receptor that is expressed in a eukaryotic cell that is also expresses a G-protein to which it couples to and to use this system to determine the activity of a compound on the activity of the taste receptor by assaying the effect of the second messengers like cAMP or MAPK, but with a different a G_i protein or, more specifically, a $G_{\alpha i3}$ protein because Li et al. show that the response of this particular chimeric G-protein shows a much more sensitive and significant intracellular calcium response to a compound that modulates T1R2/T1R3 sweet taste receptor. Because cAMP response is calcium dependent, one would subsequently expect that this calcium response would have a direct effect on the intracellular cascade second messenger system and would therefore produce a functional and successful assay according to the present invention.

16. Claims 30-32, 36 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zoller et al. and further in view of Wu et al.

Zoller et al. teach the methods as described above in paragraph 12 of this office action. Zoller et al., however, do not teach the use of T2R receptors in their method.

Wu et al. teach that STC-1 cells endogenously express the G-proteins $G_{\alpha gust}$, $G_{\alpha t-2}$ and several TR2 bitter taste receptors such as mT2R5 and rT2R9 to name just a few (see p. 2395, 3rd paragraph). They further teach that heterologous expression in HEK-293 cells of chimeric T2R receptors where the N-terminal portion of rhodopsin was utilized, demonstrated that the addition of cycloheximide (a known T2R bitter taste receptor activator) induced intracellular calcium levels in response to this compound activating this chimeric T2R receptor.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to use the method of Zoller et al. that utitlizes a functional taste receptor that is expressed in a eukaryotic cell that is also expresses a G-protein to which it couples to and to use this system to determine the activity of a compound on the activity of the taste receptor by assaying the effect of the second messengers like cAMP or MAPK, but to instead utilize T2R functional receptors rather than T1R receptors, because Wu et al. demonstrate that certain T2R receptors, such as those cited in claim 32 of the instant application, functionally couple to certain G proteins and can induce intracellular calcium responses through the activation of the T2R receptors with known activator compounds such as cycloheximide or denatonium (cited in claim 31 of the instant application). Because cAMP response is calcium dependent, one would subsequently except that this calcium response would have a direct effect on the intracellular cascade second messenger system and would therefore produce a

functional and successful assay according to the present invention that identifies compounds that both activate and block TR2 receptor activation using a cAMP assay.

17. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zoller et al. as applied to claims 1-3 above, and further in view of Wu et al.

Zoller et al. teach a method described in paragraph 10 of this Office action, in reference to claims 1-3 of the instant application. Zoller et al. do not, however, teach the G-protein of the method is an endogenously expressed G-protein.

Wu et al. teach that STC-1 cells endogenously express the G-proteins $G_{\alpha gust}$, $G_{\alpha t-2}$ (see p. 2396, first line under Calcium Response..... heading) as well as other T2R receptors. They further show that TR2 and the said G-proteins functionally couple together so as to elicit the intracellular calcium response when a compound is used to activate the T2R receptor.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a known eukaryotic cell line such as the one Wu et al. used that endogenously expresses a G-protein that functionally couples to T2R receptors and use it in the method according to Zoller et al. because Wu et al. teach that it will elicit the same sort of cellular response that a T1R receptor does, that is a compound that activates T2R will have an effect on intracellular second messengers and thus can be assayed for this effect. Therefore the Zoller et al. method should work in the same way as the method of Zoller et al. Furthermore, reasonable expectation of success of identifying compounds that modulate T2R receptors would be expected

because the cAMP response is calcium dependent and as discussed above it could therefore be used as the assay method according to the method of Zoller et al.

18. Claims 5-7, 14, 22, 44, 45, and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zuker et al., in view of McDonaldson et al. and Naor et al.

Zuker et al. teach a method for identifying a compound that modulates taste signaling taste cells by contacting the said compound with a taste transduction G-protein coupled receptor polypeptide, which is a T2R polypeptide, expressed in a eukaryotic cell, and determining the functional effect of the compound by measuring the intracellular changes of cAMP, cGMP, IP3 or calcium. Zuker et al. do not, however, teach the use of MAPK assays to determine the effect of the compound on intracellular changes.

McDonaldson et al. teach the method of proximity assays in order to detect MAPK inhibition. Naor et al. teach that MAPK is activated by G-protein coupled receptors and the specific G-proteins, namely $G_{\alpha q}$ proteins.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the G-proteins suggested by Naor et al. in the method of Zuker et al., or Zoller et al., and carry out the method of identifying compounds that modulate taste receptor activity as described by both and to assay for MAPK activity because the MAPK activity assay as outlined by McDonaldson et al. is a very simple and quick assay that can also be used for high throughput screening of compounds that modulate receptor activity (see p. 322, 2nd paragraph). Furthermore, it offers an alternative to the more traditional cAMP assays which are well known in the art.

A reasonable expectation of success would exist when assaying for MAPK activity if an appropriate G-protein is used in the eukaryotic cell line because it is well known in the art that certain G-proteins such as $G_{\alpha q}$ proteins functionally couple to T2R receptors (see, for example, Margolskee, p.1 2nd to last paragraph) and to subsequently use MAPK as activity as the assay method of choice because McDonalson et al. teach that it a quick and efficient method of assaying MAPK activity.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the method of Zucker et al. or Zoller et al. but to use T2R receptors that functionally couple $G_{\alpha q}$ proteins and to screen for modulatory compounds by using a MAPK assay.

19. Claims 55-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zoller et al. Zoller et al. on p. 25, paragraph [0271] teach that their present invention will provide for kits for screening for modulators of T1R family members. The kits can be prepared from readily available materials and prepared in such a way so as to contain T1R nucleic acids or polypeptides, or alternatively biologically active receptors or cell lines that stably or transiently express a biologically active T1R taste receptor. The kits also will include instructions and optionally test or reaction tubes. Finally a variety of kits can be made according to the particular needs of the intended user according to their specifications and according to the limitations claimed invention. Zoller et al. do not, however, teach the exact components of a kit.

Because the Zoller et al. claimed inventions directly overlap and anticipate the method steps/inventions of instant application it would have been obvious to one of

ordinary skill in the art at the time the invention was made to use the preferred embodiments of Zoller et al. and to put together a kit that uses a eukaryotic cell line such as HEK-293 that expresses either a T1R or T2R and a G-protein (see p. 22, paragraph [0240]) that functionally couples thereto, and a ligand or reagent that provides for the detection of an activated form of MAPK, cAMP or adenylyl cyclase and to detect the changes in these intracellular 2nd messengers using detectable labels on the ligands such as those outlined on p. 19, paragraphs [0204-0210] because Zoller et al. teach how to so make and supply each component of the claimed assay kit. Furthermore, they also teach that these sorts of assays utilized in the assay kit and means of detecting the said labels of the assay kit "are well known to those of skill in the art" (see p. 19, paragraph [0209], first line). Therefore a reasonable expectation of success exists in creating a kit such as that claimed in the instant application and would have been obvious to a skilled artisan to produce one.

Conclusion

20. No claims allowed. Claims 4-25, 27-54 and 60-65 are objected to as well as rejected to.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Suzanne M. Mayer, Ph.D. whose telephone number is 571-272-2924. The examiner can normally be reached Monday to Friday from 8.30am to 5.00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jon Weber can be reached on 571-272-0925. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SMM
12 October, 2004

ROBERT A. WAX
PRIMARY EXAMINER